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An Investigation on A New Structure of Stirling Type Two-stage Pulse Tube Cryocooler

This paper introduces a new structure of Stirling type two-stage cryocooler driven by a linear compressor with an input power of 250W at an operating frequency of 27 Hz. The cryocooler is compact in structure, for both of the two stages have a co-axial configuration and the reservoir of the second stage also works as the radiation shield. The warm end of the second stage is set at the cold end of the first stage. For both stages, the regenerator matrix consists of a stack of stainless steel screen. The second stage applied a capillary tube and a reservoir as phase shifters. At the operating frequency of 27 Hz the noload temperature 16.3 K has been achieved at the second stage and 47 K at the first stage. The influence of charge pressure, input power and cold phase shifter are also reported.

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